

Translation

PATENT COOPERATION TREATY

PCT/CH2003/000796



PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 155400.1/LE/mb	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/CH2003/000796	International filing date (<i>day/month/year</i>) 02 December 2003 (02.12.2003)	Priority date (<i>day/month/year</i>)
International Patent Classification (IPC) or national classification and IPC H01J 35/04		
Applicant COMET HOLDING AG		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising: a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of <u>6</u> sheets, as follows: <div style="margin-left: 20px;"><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</div> b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items: <div style="margin-left: 20px;"><input checked="" type="checkbox"/> Box No. I Basis of the report <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement <input type="checkbox"/> Box No. VI Certain documents cited <input type="checkbox"/> Box No. VII Certain defects in the international application <input type="checkbox"/> Box No. VIII Certain observations on the international application</div>

Date of submission of the demand 11 December 2004 (11.12.2004)	Date of completion of this report 11 April 2006 (11.04.2006)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/CH2003/000796

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language _____, which is language of a translation furnished for the purpose of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☐ The international application as originally filed/furnished
- ☒ the description:
- pages _____ 1-3, 7-17 _____, as originally filed/furnished
- pages* _____ 4-6 _____ received by this Authority on 28 February 2006 (28.02.2006)
- pages* _____ received by this Authority on _____
- ☒ the claims:
- pages _____, as originally filed/furnished
- pages* _____, as amended (together with any statement) under Article 19
- pages* _____ 1-12 _____ received by this Authority on 28 February 2006 (28.02.2006)
- pages* _____ received by this Authority on _____
- ☒ the drawings:
- pages _____ 1/13-13/13 _____, as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/CH 03/00796

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-12	YES
	Claims		NO
Inventive step (IS)	Claims	1-12	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-12	YES
	Claims		NO

2. Citations and explanations

Reference is made to the following documents:

D1: US 2003/048875 A1 (ISHIBASHI AKIRA ET AL),
13 March 2003 (2003-03-13)

D3: US-A-6 111 932 (DINSMORE MARK),
29 August 2000 (2000-08-29)

Document D3, which is considered to be the prior art closest to the subject matter of claim 1, discloses the following (the references in parentheses are to D3):

An X-ray tube in which an anode and a cathode are mounted opposite each other in a vacuumised inner chamber (this is implicit from the arrangement of accelerator elements 112, 114 etc.); wherein electrons can be generated at the cathode; wherein a first acceleration stage (120) comprises the electron extraction cathode; wherein electrons can be accelerated towards the anode by the application of a high voltage; wherein the X-ray tube comprises a plurality of mutually complementary acceleration stages (112, 114 etc.); wherein each acceleration stage comprises at least one potential-carrying electrode; wherein the X-ray tube comprises at least one additional (114, 116 etc.)

acceleration stage with a potential-carrying electrode; wherein as many acceleration stages as necessary can be connected in series for the purpose of accelerating electrons; and wherein the X-ray tube is of modular construction (see column 4, line 24).

The subject matter of claim 1 differs from the X-ray tube known from D3 in that there is a second acceleration stage which incorporates the X-ray generating anode.

The subject matter of claim 1 is therefore novel (PCT Article 33(2)).

The problem addressed by the present invention can thus be seen as that of simplifying the design of the X-ray tube, which in D1 is an accelerator with an external anode.

The solution proposed in claim 1 of the application involves an inventive step (PCT Article 33(3)) because the combination of features specified in claim 1 is not known from any of the available documents. The prior art describes either tubes that have a built-in anodes but are not of modular construction (see document D1), or, as in document D3, constructions that are modular but do not include the anode as one of the stages.

Claims 2 to 11 are dependent on claim 1 and therefore also meet the PCT requirements in respect of novelty and inventive step.

Method claim 12 is directed to a "Method for producing an X-ray tube according to [...] claim 1 [...]". Since the subject matter of claim 1 is novel and inventive, the same also applies to the subject matter of claim 12.